WHAT IS CLAIMED IS:

1. A magnetoresistive effect thin-film magnetic head, comprising:

a lower shield layer;

a lower gap layer made of a nonmagnetic electrically conductive material and laminated on said lower shield layer;

a magnetoresistive effect multilayer in which a current flows in a direction perpendicular to surfaces of layers of said magnetoresistive effect multilayer, said magnetoresistive effect multilayer being laminated on said lower gap layer;

an upper gap layer made of a nonmagnetic electrically conductive material and laminated on said magnetoresistive effect multilayer;

an insulation gap layer made of an insulation material and formed at least between said lower shield layer and said upper gap layer;

an upper shield layer laminated on said upper gap layer and said insulation gap layer; and

an additional insulation layer formed so that a distance between said lower shield layer and said upper gap layer increases at a location where said magnetoresistive effect multilayer is absent.

2. The magnetoresistive effect thin-film magnetic head as claimed in claim 1, wherein said additional insulation layer

is formed in a recess provided in said lower shield layer at a position where said magnetoresistive effect multilayer is absent.

3. The magnetoresistive effect thin-film magnetic head as claimed in claim 1, wherein said additional insulation layer is formed as an under layer of said upper gap layer at a position where said magnetoresistive effect multilayer is absent.

4. The magnetoresistive effect thin-film magnetic head as claimed in claim 1, wherein said magnetoresistive effect multilayer is a tunnel magnetoresistive effect multilayer including a tunnel barrier layer and a pair of ferromagnetic thin-film layers between which said tunnel barrier layer is sandwiched.

5. The magnetoresistive effect thin-film magnetic head as claimed in claim 1, wherein said magnetoresistive effect multilayer is a current perpendicular to the plane giant magnetoresistive effect multilayer including a nonmagnetic metal layer, and a pair of ferromagnetic thin-film layers between which said nonmagnetic metal layer is sandwiched.

6. A manufacturing method of a magnetoresistive effect

thin-film magnetic head provided with a magnetoresistive effect multilayer in which a current flows in a direction perpendicular to surfaces of layers of said magnetoresistive effect multilayer, said method comprising the steps of:

forming a lower shield layer;

forming a recess in a part of said lower shield layer at a position where said magnetoresistive effect multilayer is to be absent;

forming an additional insulation layer in said recess;

forming a lower gap layer of a nonmagnetic electrically conductive material on said lower shield layer at a position where said magnetoresistive effect multilayer is to be formed;

forming the magnetoresistive effect multilayer on said lower gap layer;

forming an insulation gap layer of an insulation material at least on said additional insulation layer to surround said lower gap layer and said magnetoresistive effect multilayer;

forming an upper gap layer of a nonmagnetic electrically conductive material on said magnetoresistive effect multilayer and said insulation gap layer; and

forming an upper shield layer on said upper gap layer.

7. The manufacturing method as claimed in claim 6, wherein said forming step of said magnetoresistive effect multilayer

comprises forming of a tunnel magnetoresistive effect multilayer including a tunnel barrier layer and a pair of ferromagnetic thin-film layers between which said tunnel barrier layer is sandwiched.

8. The manufacturing method as claimed in claim 6, wherein said forming step of said magnetoresistive effect multilayer comprises forming of a current perpendicular to the plane giant magnetoresistive effect multilayer including a nonmagnetic metal layer, and a pair of ferromagnetic thin-film layers between which said nonmagnetic metal layer is sandwiched.

9. A manufacturing method of a magnetoresistive effect thin-film magnetic head provided with a magnetoresistive effect multilayer in which a current flows in a direction perpendicular to surfaces of layers of said magnetoresistive effect multilayer, said method comprising the steps of:

forming a lower shield layer;

forming a lower gap layer of a nonmagnetic electrically conductive material on said lower shield layer at a position where said magnetoresistive effect multilayer is to be formed;

forming the magnetoresistive effect multilayer on said lower gap layer;

forming an insulation gap layer of an insulation

material on said lower shield layer to surround said lower gap layer and said magnetoresistive effect multilayer;

forming an additional insulation layer on said insulation gap layer at a position where said magnetoresistive effect multilayer is absent;

forming an upper gap layer of a nonmagnetic electrically conductive material on said magnetoresistive effect multilayer and said additional insulation layer; and

forming an upper shield layer on said upper gap layer.

10. The manufacturing method as claimed in claim 9, wherein said forming step of said magnetoresistive effect multilayer comprises forming of a tunnel magnetoresistive effect multilayer including a tunnel barrier layer and a pair of ferromagnetic thin-film layers between which said tunnel barrier layer is sandwiched.

11. The manufacturing method as claimed in claim 9, wherein said forming step of said magnetoresistive effect multilayer comprises forming of a current perpendicular to the plane giant magnetoresistive effect multilayer including a nonmagnetic metal layer, and a pair of ferromagnetic thin-film layers between which said nonmagnetic metal layer is sandwiched.

12. A manufacturing method of a magnetoresistive effect thin-film magnetic head provided with a magnetoresistive effect multilayer in which a current flows in a direction perpendicular to surfaces of layers of said magnetoresistive effect multilayer, said method comprising the steps of:

forming a lower shield layer;

forming a recess in a part of said lower shield layer at a position where said magnetoresistive effect multilayer is to be absent;

forming a first additional insulation layer in said recess;

forming a lower gap layer of a nonmagnetic electrically conductive material on said lower shield layer at a position where said magnetoresistive effect multilayer is to be formed;

forming the magnetoresistive effect multilayer on said lower gap layer;

forming an insulation gap layer of an insulation material at least on said first additional insulation layer to surround said lower gap layer and said magnetoresistive effect multilayer;

forming a second additional insulation layer on said insulation gap layer at a position where said magnetoresistive effect multilayer is absent;

forming an upper gap layer of a nonmagnetic electrically conductive material on said magnetoresistive

effect multilayer and said second additional insulation layer; and

forming an upper shield layer on said upper gap layer.

13. The manufacturing method as claimed in claim 12, wherein said forming step of said magnetoresistive effect multilayer comprises forming of a tunnel magnetoresistive effect multilayer including a tunnel barrier layer and a pair of ferromagnetic thin-film layers between which said tunnel barrier layer is sandwiched.

14. The manufacturing method as claimed in claim 12, wherein said forming step of said magnetoresistive effect multilayer comprises forming of a current perpendicular to the plane giant magnetoresistive effect multilayer including a nonmagnetic metal layer, and a pair of ferromagnetic thin-film layers between which said nonmagnetic metal layer is sandwiched.